Atmospheric River Retrospective Forecasting Experiment

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The Hydrometeorology Testbed (HMT) at NOAA's Physical Sciences Division (HMT-PSD) will be partnering with the HMT at NCEP's Hydrometeorological Prediction Center (HMT-HPC) to conduct the Atmospheric River Retrospective Forecasting Experiment (ARRFE) in the late summer of 2012. The primary objective will be to identify techniques that improve the prediction of atmospheric rivers (AR), and subsequent quantitative precipitation forecasts (QPF). Specifically, the goals of the experiment are: (1) evaluate the strengths and weaknesses of individual models and experimental datasets, including the HMT-West ensemble, on how they handle and resolve AR features at different timescales, (2) determine the viability of rainfall category (R-Cats) usage in the operational setting, and (3) foster collaboration between NCEP centers and NOAA labs.

The experiment will be a week-long retrospective analysis of 3-4 AR events that impacted the U.S. West coast during the 2010-2012 cool seasons. A collaborative team featuring HPC QPF, Medium Range, and Winter Weather Desk forecasters, as well as HMT researchers, will use a wide range of numerical model guidance, including the HMT-West ensemble, in real time to: (1) identify the timing (e.g., duration plus start and end times) of landfalling ARs, (2) create 72-hour cumulative QPFs for Days 1-3, and (3) produce a forecast of the probability that QPF will exceed a specific 24 hour precipitation threshold within the next 7 days (e.g., greater than 4 inches).

As part of this experiment, the participants will be asked to incorporate R-Cats into products to evaluate their use in diagnosing potential threats and hazards associated with ARs. Additionally, forecasters will detail their confidence in storm track, timing, precipitation amount, as well as model guidance impressions. Participants will also use Stage IV and Atmospheric River Observatory (ARO) site data to verify their forecasts, with an additional focus on verifying the timing and duration of the landfalling AR at 4 individual sites along the West Coast.